CYTRX CORP Form S-3/A March 10, 2003 Table of Contents

As filed with the Securities and Exchange Commission on March 10, 2003

Reg. No. 333-100947

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

AMENDMENT NO. 1 TO FORM S-3

REGISTRATION STATEMENT

UNDER

THE SECURITIES ACT OF 1933

CYTRX CORPORATION

(Exact name of registrant as specified in its charter)

Delaware (State or other jurisdiction of

58-1642750 (I.R.S. Employer

incorporation or organization)

Identification No.)

CytRx Corporation

11726 San Vicente Boulevard, Suite 650

Los Angeles, California 90049

(Address, including zip code, and telephone number, including area code, of Registrant s principal executive offices)

Steven A. Kriegsman

CytRx Corporation

11726 San Vicente Boulevard., Suite 650

Los Angeles, California 90049

(310) 826-5648

(Name, address, including zip code, and telephone number, including area code, of agent for service)

With a copy to:

Sanford J. Hillsberg, Esq.

Istvan Benko, Esq.

Troy & Gould Professional Corporation

1801 Century Park East, Suite 1600 Los Angeles, California 90067

(310) 553-4441

Approximate date of commencement of proposed sale to public: As soon as practicable after this Registration Statement becomes effective.

If the only securities being registered on this form are being offered pursuant to dividend or interest reinvestment plans, please check the following box.

If any of the securities being registered on this form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box. x

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If delivery of the prospectus is expected to be made pursuant to Rule 434, please check the following box.

CALCULATION OF REGISTRATION FEE

Title of Each Class of Securities to be Registered	Amount to be Registered		Proposed Maximum Offering Price Per Share		Proposed Maximum Aggregate Offering Price		Amount of Registration Fee	
Common Stock, \$.001 par value	9,148,204 shares	\$	0.29(1)	\$ 2	2,652,979	\$	244.08	
Common Stock, \$.001 par value	1,014,677 shares(2)	\$	0.01(3)	\$	10,147	\$	0.93	
Common Stock, \$.001 par value	141,388 shares(2)	\$	1.00(3)	\$	141,388	\$	13.01	
Common Stock, \$.001 par value	250,000 shares(2)	\$	0.58(3)	\$	145,000	\$	13.34	
Total Registration Fee						\$	271.36(4)	

- (1) Estimated solely for the purpose of calculating the registration fee. Based, pursuant to Rule 457, on the average of the high and low sale prices of Registrant s Common Stock as reported on Nasdaq SmallCap Market on October 28, 2002. Each share of our common stock is accompanied by one share of our Series A junior participating preferred stock purchase rights that trades with the common stock. The value attributed to those rights, if any, is reflected in the market price of our common stock. Prior to the occurrence of certain events, none of which has occurred as of this date, the rights will not be exercisable or evidenced separately from the common stock.
- (2) Represents shares issuable upon exercise of outstanding warrants. In accordance with Rule 416, there is also being registered hereunder such indeterminate number of additional shares of Common Stock as may become issuable upon exercise of the warrants to prevent dilution resulting from stock splits, stock dividends or similar transactions.
- (3) Based, pursuant to Rule 457, on the exercise price of the warrants.
- (4) We previously paid a filing fee of \$397.72 with the original filing of this Registration Statement.

THE REGISTRANT HEREBY AMENDS THIS REGISTRATION STATEMENT ON SUCH DATE OR DATES AS MAY BE NECESSARY TO DELAY ITS EFFECTIVE DATE UNTIL THE REGISTRANT SHALL FILE A FURTHER AMENDMENT WHICH SPECIFICALLY STATES THAT THIS REGISTRATION STATEMENT SHALL THEREAFTER BECOME EFFECTIVE IN ACCORDANCE WITH SECTION 8(A) OF THE SECURITIES ACT OF 1933 OR UNTIL THIS REGISTRATION STATEMENT SHALL BECOME EFFECTIVE ON SUCH DATE AS THE COMMISSION, ACTING PURSUANT TO SAID SECTION 8(A), MAY DETERMINE.

Information contained in this prospectus is subject to completion or amendment. A registration statement relating to these securities has been filed with the Securities and Exchange Commission. These securities may not be sold until the registration statement becomes effective. This prospectus is not an offer to sell and is not a solicitation of an offer to buy these securities in any state in which an offer, solicitation or sale is not permitted.

SUBJECT TO COMPLETION, MARCH 10, 2003.

PROSPECTUS

10,554,269 Shares

CYTRX CORPORATION

Common Stock

All of the shares of our common stock offered hereby are being sold by the securityholders listed in this prospectus. See Selling Securityholders. Each of the shares is accompanied by one share of our Series A junior participating preferred stock purchase rights that trades with our common stock. Of the shares offered, 1,406,065 are issuable upon the exercise of outstanding warrants to purchase our common stock held by certain of the selling securityholders. The number of shares offered by these selling securityholders is subject to increase in certain events by reason of so-called antidilution provisions contained in the warrants held by them. The selling securityholders holding warrants must first exercise the warrants and acquire the underlying shares from us before they can resell those shares under this prospectus.

We will receive the exercise price of the warrants described in this prospectus to the extent they are exercised for cash, but we will not otherwise receive any proceeds in connection with the sale of the shares by the selling securityholders. See Use of Proceeds.

Our common stock is traded on the Nasdaq SmallCap Market under the symbol CYTR . On March 7, 2003, the last sale price for the common stock as reported on the Nasdaq SmallCap Market was \$.45.

The selling securityholders may offer the shares from time-to-time to or through brokers, dealers or other agents, or directly to other purchasers, in one or more market transactions or private transactions at prevailing market or at negotiated prices. See Plan of Distribution.

We will bear the costs and expenses of registering the shares offered by the selling securityholders. The selling securityholders will bear any commissions and discounts attributable to their sales of the shares.

An investment in the common stock involves a high degree of risk. Before purchasing any shares, you should consider carefully the risks described under Risk Factors beginning on page 7.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved the common stock or determined that this prospectus is complete or accurate. Any representation to the contrary is a criminal offense.

The date of this prospectus is _____, 2003

You should rely only on the information contained or incorporated by reference in this prospectus and any supplement. We have not authorized any other person to provide you with different or additional information. If anyone provides you with different or additional information, you should not rely on it. This prospectus is not an offer to sell these securities in any jurisdiction where the offer or sale is not permitted. You should assume that the information appearing in or incorporated by reference in this prospectus and any supplement is accurate as of its date only. Our business, financial condition, results of operations, and prospects may have changed since that date.

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THE COMPANY

General

We are a Delaware corporation that was incorporated in 1985 and is engaged in the development and commercialization of pharmaceutical products. Our current products are FLOCOR, an intravenous agent for treatment of sickle cell disease (an inherited disease caused by a genetic mutation of hemoglobin in the blood) and other acute vaso-occlusive disorders (a blockage of blood flow caused by deformed or sickled red blood cells which can cause intense pain in sickle cell disease patients), and TranzFect, a delivery technology for DNA and conventional-based vaccines. We are currently seeking strategic partners to complete the development of FLOCOR, and TranzFect is currently being developed by our two licensees for this product. We are seeking to license our TranzFect technology for development as a potential DNA-based prostate cancer adjuvant (an agent added to a vaccine to increase its effectiveness) and may also seek to license this technology as a potential conventional adjuvant for hepatitis B and C, flu, malaria and other viral diseases. We also have a portfolio of potential products and technologies in areas that include spinal cord injury, vaccine delivery and gene therapy. In addition, we own minority interests in two development stage genomics companies.

Product Development

Therapeutic Copolymer Programs

General. Our primary focus is on CRL-5861 (purified poloxamer 188), which we also call FLOCOR for purposes of our potential sickle cell disease product. CRL-5861 is a novel, intra-vascular agent with pharmacological properties that can be characterized as rheologic (related to blood flow), cytoprotective (protects certain cells during chemotherapy) and anti-adhesive / anti-thrombotic (prevents blood clot formation). CRL-5861 is an intravenous solution that has the unique property of improving micro-vascular blood flow. Extensive preclinical and clinical studies suggest CRL-5861 may be of significant benefit in acute ischemic vascular disorders (a decrease in the

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blood supply to a bodily organ, tissue or part caused by constriction or obstruction of the blood vessels) such as stroke, heart attack, and vaso-occlusive disorder crisis. CRL-5861 may also provide benefit in cancer when used in combination with radiation or cytotoxic drugs (drugs that can produce a toxic effect in cells). Through its effect on increasing blood flow, CRL-5861 is thought to (1) increase delivery of cytotoxic drugs to ischemic portions of tumors, and (2) increase oxygen delivery, thus increasing the sensitivity of tumor cells to drug and radiation therapy.

The safety profile of CRL-5861 is well established. It has been investigated in over 17 clinical studies representing administration to approximately 4,000 patients and healthy volunteers.

Sickle Cell Disease. We believe CRL-5861 may have significant potential in treating a variety of vascular-occlusive diseases, including sickle cell disease, spinal cord compression injury, muscular dystrophy and delivery of anti-cancer agents. Sickle cell disease is a devastating disorder originating from an inherited abnormality of hemoglobin, the oxygen-carrying molecule in red blood cells, which is typically seen in African-Americans and others of African descent. Under conditions of low blood oxygen, which is generally caused by dehydration or stress, the sickle cell victim s hemoglobin becomes rigid, causing red blood cells to become rough, sticky and irregularly shaped, often looking like sickles, which gives the disease its name.

The most common problem sickle cell patients face is episodic pain (also referred to as vaso-occlusive crisis, or VOC). These episodes can last anywhere from days to weeks, and can vary significantly in their severity. Aside from causing considerable pain and suffering, these crisis episodes slowly destroy vital organs as they are deprived of oxygen. As a result, the life expectancy of sickle cell victims is about twenty years shorter than those without the disease. Patients suffering from sickle cell disease may experience several crisis episodes each year. Hospitalization is required when pain becomes too much to bear. There are about 75,000 hospital admissions annually to treat sickle cell patients undergoing acute vascular-occlusive crisis caused by the disease. On average, these patients require in-patient treatment for four to seven days. Currently, there is no disease modifying treatment for acute crisis of sickle cell disease and treatment is limited to narcotics, fluids and bed rest.

In sickle cell disease, the application of FLOCOR can best be described as an intravenous blood lubricant. FLOCOR s unique surface-active properties decrease blood viscosity and enable the rigid sickled cells to become more flexible, thus allowing easier passage of blood cells through narrow blood vessels. We believe FLOCOR can provide limited periods of relief from pain by shortening the episodes of vaso-occlusive crises and, most importantly, preserve organ function.

In December 1999, we reported results from a Phase III clinical study of FLOCOR for treatment of acute sickle cell crisis. Although the study did not demonstrate statistical significance in the primary endpoint (objective of the study), statistically significant and clinically important benefits associated with FLOCOR were observed in certain subgroups. In addition, among the entire patient population, treatment with FLOCOR resulted in a statistically significant increase in the percentage of patients achieving resolution of their crisis. The Phase III study also demonstrated that FLOCOR is well tolerated. Based on our conversations with the United States Food and Drug Administration (FDA), we believe it is likely that either two small additional pivotal trials or one large trial will be required for FLOCOR s approval, along with one to two additional safety studies.

Because of the substantial expenditures that will be required to conduct the required additional clinical testing of FLOCOR, we are not at this time continuing our internal efforts to develop FLOCOR but are, consistent with our new business strategy, seeking a strategic alliance with a larger company to complete the development of FLOCOR and market this product. See The Company-Recent Developments.

Spinal Cord Injury. Traumatic spinal cord damage is one of the most devastating injuries imaginable, and unfortunately occurs primarily in young people, often resulting in complete paralysis. Researchers believe that a significant portion of spinal cord damage results from a secondary progression of damage after the initial

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injury. This secondary injury results from membrane injury to nerve cells, causing them to lose function over time.

Scientists associated with a major university medical center are currently testing compounds related to CRL-5861 for their ability to interact with damaged nerve membranes in such a way as to seal the damage and restore membrane integrity. If successful, this treatment could limit the progression of secondary, post-injury damage, thereby maintaining or restoring spinal cord function. Assuming the successful outcome of these preliminary studies in animals, which would need to be confirmed in clinical trials, we believe it could be possible for any strategic partner that we might be able to secure to be able to proceed very quickly with the clinical development of this agent since the program will benefit from the existing safety and manufacturing capabilities already in place from our FLOCOR program. To proceed with this development, we or our potential strategic partner would need to enter into a license or other arrangement with the medical center.

Vaccine Enhancement and Gene Therapy

DNA Vaccines & Gene Therapy. Gene therapy and/or gene based vaccines are mediated through the delivery of DNA containing selected genes into cells by a process known as transfection. We refer to our gene delivery technology as TranzFect. A common class of materials used to enhance the transfection process are known as cationic lipids. This type of lipid can associate with and alter the integrity of a cell membrane, thus increasing the uptake of the complexed DNA. Unfortunately, cationic lipids are toxic to cells and are readily metabolized. Thus the effect of these agents in transfection protocols is not readily reproducible when used in vivo.

We have identified a series of non-ionic block copolymers known as poloxamers that share several physico-chemical traits with the cationic lipids in that they associate with DNA and cell membranes. (Block copolymers are composed of short segments of two different kinds of polymer, while non-ionic block copolymers do not have any cations (e.g. Na+ or Ca++) attached to them.) However, the block copolymers are significantly less toxic than the cationic lipids and are not metabolized in vivo. In addition, the poloxamer family of non-ionic block copolymers have a significant history of being safely used in a wide variety of oral, injectable, and topical pharmaceutical products. Importantly, a poloxamer known as CRL-1005, which is among the most active in transfection protocols and is adjuvant active, has been studied in a Phase I clinical trial. In that trial, CRL-1005 was well tolerated at doses significantly higher than those anticipated to be useful in gene therapy or DNA vaccine studies.

In addition to the ability of poloxamers to enhance transfection, these compounds have significant immuno-adjuvant (an immunlogical agent added to a vaccine to increase its antigenic response) activity. Accordingly, we believe that an optimal application for this technology may be in the field of DNA vaccines. We believe that in this application, the activity of poloxamers will be two-fold. First, the poloxamers will act as delivery/transfection agents to facilitate the intracellular delivery and protection of the DNA from enzymatic digestion. Second, the poloxamer will act as an immuno-adjuvant. Since the poloxamer is not metabolized and has surface active properties, it is likely to remain on the surface of the transfected cell awaiting expression of the gene. When the gene product is excreted from the cell, the poloxamer is likely to associate with the antigen (a substance that when introduced into the body, stimulates the production of an antibody) and exert immuno-adjuvant actions. Numerous preclinical and clinical studies have demonstrated that conventional vaccines adjuvanted with poloxamers are well tolerated and result in significantly enhanced antibody and cellular immune responses.

A large majority of our revenues over the past two years has been generated from license fees paid to us with respect to our TranzFect technology.

Merck License. in November 2000, we entered into an exclusive, worldwide license agreement with Merck & Co., Inc. whereby we granted Merck the right to use our TranzFect technology in DNA-based vaccines targeted to four infectious diseases, one of which is HIV. To date,

Merck has focused its efforts on the HIV application, which is still at an early stage of clinical development.

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In November 2000, Merck paid us a signature payment of \$2 million and in February 2002, Merck paid us an additional \$1 million milestone fee related to the commencement by Merck of the first FDA Phase I Study for the first product incorporating TranzFect designed for the prevention and treatment of HIV. Merck will also pay us up to \$3 million in \$1 million increments within 30 days of the occurrence of each of the following: (1) the commencement by Merck of the earlier of the first FDA Phase IIb Study or Phase III Study for such HIV product; (2) the filing by Merck of the first U.S. Public Health Service Act Product License Application in one of the countries mentioned below for such HIV product; and (3) notification from a regulatory authority in the United States, Canada, France, Germany, Italy, Spain, the United Kingdom or Japan that all approvals for the marketing of such HIV product, including pricing approvals, have been granted. Merck also agreed to pay us an annual fee of \$50,000 the first year, \$75,000 the second year, and \$100,000 the third year and each additional year thereafter until Merck receives notification from a regulatory authority as mentioned above. These annual payments may be used by Merck to offset future royalty payments that they may owe us.

For the products incorporating TranzFect targeting the other diseases, Merck will pay us milestone payments of up to \$2,850,000 in the following increments: (1) \$100,000 for the commencement by Merck of the first FDA Phase I Study; (2) \$250,000 for the commencement by Merck of the earlier of the first FDA Phase IIb Study or Phase III Study; (3) \$500,000 for the filing by Merck of the first U.S. Public Health Service Act Product License Application in one of the countries mentioned below; and (4) \$2 million for notification from a regulatory authority in the United States, Canada, France, Germany, Italy, Spain, the United Kingdom or Japan that all approvals for the marketing of such product, including pricing approvals, have been granted.

Merck also will pay to us royalties of between 2% and 4%, on a country-by-country basis, based on net sales. Merck will pay an additional 1% royalty on net sales if certain conditions are met regarding patent protection and Merck s competitive position. The royalty payments are subject to certain reductions.

This agreement remains effective unless terminated according to its terms by either party or until the expiration of all royalty obligations thereunder. Merck may terminate this agreement at any time in its sole discretion by giving 90 days written notice. Upon termination by Merck, the rights and obligations under the agreement, including any licenses and payment obligations not yet due, also terminate. The agreement may also be terminated for cause by either party. All amounts paid to us are non-refundable upon termination of the agreement and require no additional effort on our part.

Vical License. In December, 2001, we entered into a license agreement with Vical Incorporated granting Vical exclusive, worldwide rights to use or sublicense our TranzFect poloxamer technology to enhance viral or non-viral delivery of polynucleotides (such as DNA and RNA) in all preventive and therapeutic human and animal health applications, except for (1) four infectious disease vaccine targets previously licensed by us to Merck, and (2) DNA vaccines or therapeutics based on prostate-specific membrane antigen (PSMA). In addition, the Vical license permits Vical to use TranzFect poloxamer technology to enhance the delivery of proteins in prime-boost vaccine applications that involve the use of polynucleotides (short segments of DNA or RNA). Vical has not yet commenced any clinical development work with our TranzFect technology.

Under the Vical license, we received a non-refundable up-front payment of \$3,750,000, and we have the potential to receive milestone and royalty payments in the future based on criteria described in the agreement. All amounts paid to us are non-refundable upon termination and require no additional effort on our part.

Conventional Vaccines. As part of our TranzFect program, we have developed a library of compounds, many of which have been shown to enhance the activity of conventional vaccines. We refer to this program as Optivax. We are seeking other potential licensees for Optivax applications.

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Other Product Development Efforts

Food Animal Growth Promotant. The FDA has expressed a growing concern about the use of low level antibiotics in animal feed and the possibility of resultant antibiotic resistance in human pathogens. Pending regulations at the FDA could suspend farmers—use of any antibiotics found to promote the spread of resistant human pathogens. In experimental studies, our compound, CRL-8761, has been shown to have a consistent effect to improve the rate of weight gain and feed efficiency in well-controlled studies in poultry and swine. CRL-8761 consistently provides the same growth performance benefits as antibiotics but, since it has no antibiotic activity, it is free from human health concerns over the use of antibiotics.

In February 2001, we entered into a license agreement with Ivy Animal Health, Inc. under which we granted Ivy a worldwide exclusive license to CRL-8761. As part of the license, we received a nominal up-front payment, and will receive a milestone fee upon regulatory approval in the United States and a future royalty equal to 5% of net sales.

Recent Developments

On July 19, 2002, we completed the acquisition of Global Genomics Capital, Inc. The acquisition of Global Genomics was accomplished through a merger of our wholly owned subsidiary, GGC Merger Corporation, with and into Global Genomics. Global Genomics was the surviving corporation in the merger and is now our wholly owned subsidiary. We have changed Global Genomics name to GGC Pharmaceuticals, Inc., but for purposes of this prospectus, we will continue to refer to the company as Global Genomics.

In the Global Genomics merger, each outstanding share of common stock of Global Genomics was converted into 0.765967 shares of our common stock. Accordingly, a total of 8,948,204 shares of our common stock, or approximately 41.7% of our common stock outstanding immediately after the merger, were issued to the common stockholders of Global Genomics, and an additional 1,014,677 shares of our common stock were reserved for issuance upon the exercise of the outstanding Global Genomics warrants that we assumed in the merger. Other than the foregoing stock, we paid no other consideration to the Global Genomics shareholders.

Global Genomics is a development stage company that has been engaged principally in investing in or acquiring companies that develop and commercialize healthcare products driven by genomics technologies. Global Genomics primary assets are a 40% equity interest in Blizzard Genomics, Inc. and a 5% equity interest in Psynomics, Inc.

Blizzard Genomics is developing instrumentation, software and consumable supplies for the growing genomics industry. Blizzard Genomics is the exclusive sublicensee of a technology that it believes allows for cheaper, faster and more portable analysis of DNA, through the use of its own readers and DNA chips, as compared to other currently available technology. Subject to having sufficient financial resources, Blizzard Genomics has plans to commercially launch its first chip reader during the first half of 2003. Blizzard Genomics I-Scarchip reader acquires the image of labeled DNA attached to a DNA chip. It is a portable, flexible, easy-to-use instrument with DNA detection and analysis capabilities that Blizzard Genomics believes are comparable to those of DNA chip readers that are more expensive. Blizzard Genomics T-Chiphermal hybridization station produces a stable, reproducible temperature gradient across the surface of the T-Chip DNA chip. This innovation enables researchers and clinicians to use straightforward temperature versus position analyses to detect the smallest changes in a DNA strand. Most importantly, Blizzard Genomics thermal gradient technology can distinguish previously undetectable genetic variants in disease and pathogenic agents. Since these two products are primarily for use in research laboratories, they will need to be approved by the FDA before they can be marketed.

Psynomics is an early stage psychiatric genomics company. Psynomics is currently operating, as a virtual company out of the University of California, San Diego and has had an ongoing research collaboration with its founders at that university. Psynomics short-term goal is to identify the genes that cause common neuropsychiatric diseases, such as bipolar disorder, schizophrenia and depression and to develop diagnostic tests for these diseases. Initial research by the founders of Psynomics has resulted in patent applications being filed for discoveries in the bipolar

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disorder area. Psynomics long-term goal is to provide the tools to the pharmaceutical industry to develop novel drug and gene therapy products for neuropsychiatric diseases, but Psynomics has not yet commenced any work in this area. We do not currently intend to allocate additional capital to Global Genomics for it to make further investments in its two existing portfolio companies or in new companies.

At the time of the Global Genomics merger, there were no material relationships between Global Genomics or any of its shareholders or affiliates and us, except that on July 16, 2002, Global Genomics three designees to our Board of Directors, Steven A. Kriegsman, Louis J. Ignarro, Ph.D. and Joseph Rubinfeld, Ph.D., were elected directors and Steven A. Kriegsman became our Chief Executive Officer. Mr. Kriegsman was Global Genomics Chairman and Dr. Ignarro was a director of Global Genomics at that time. On the date of the merger, the controlling shareholder of Global Genomics was Steven A. Kriegsman, who beneficially owned, on a fully diluted basis, approximately 41.3% of Global Genomics equity interest.

The shares of our common stock that we issued in the merger with Global Genomics or that we will issue upon exercise of warrants issued by Global Genomics that we assumed in the merger were not registered under the Securities Act. As a result, resale of these shares is restricted under the Securities Act. However, pursuant to a registration rights agreement that we signed with the former shareholders of Global Genomics, we agreed under certain circumstances to register these shares. This prospectus is part of the registration statement that we filed as a result of our agreement to register these shares, and this prospectus also covers the resale of certain other shares of our common stock that are issuable upon the exercise of warrants that we have issued to third parties.

Subsequent to our merger with Global Genomics, we modified our corporate business strategy by discontinuing any additional internal research and development efforts for any of our existing technologies. We have, instead, more recently focused our efforts on obtaining strategic alliances, license partners or other collaborative arrangements with larger pharmaceutical companies for FLOCOR and additional license partners for TranzFect. Our spending for each of these technologies now will primarily relate to maintaining patents and other agreements as required under our existing license agreements and to support our additional licensing efforts. We may also pursue product acquisition opportunities. These product acquisition activities could include our acquisition through a merger of one or more privately held companies possessing existing or potential products or technologies that we consider to be attractive, although we have not entered into any commitments to merge with or acquire any other company.

RISK FACTORS

You should carefully consider the following risks before deciding to purchase shares of our common stock. If any of the following risks actually occur, the trading price of our common stock could decline, and you could lose all or part of your investment. You should also refer to the other information in this prospectus and the information incorporated into this registration statement by reference, including our financial statements and the related notes.

We Have Operated at a Loss and Will Likely Continue to Operate at a Loss For the Foreseeable Future

We have incurred significant losses over the past five years, including net losses of approximately (\$15,029,000) (\$348,000) and (\$931,000) for 1999, 2000 and 2001 and a net loss of approximately (\$3,589,000) for the nine months ended September 30, 2002 (on an unaudited basis), and we had an accumulated deficit of approximately (\$69,371,000) as of September 30, 2002 (on an unaudited basis). Our operating losses have been due primarily to our expenditures for research and development on our products and for general and administrative expenses and our lack of significant revenues. We are likely to continue to incur operating losses until such time, if ever, as we generate significant recurring revenues. Unless we are able to acquire products from third parties that are already being marketed and that can be profitably marketed by us, it will take

an extended period of time for us to generate recurring revenues. We anticipate that it will take at least several years before the

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development of any of our licensed or other current potential products is completed, FDA marketing approvals are obtained and commercial sales of any of these products can begin.

We Have No Source of Significant Recurring Revenues, Which May Make Us Dependent on Financing to Sustain Our Operations

Although we generated \$3,751,000 in revenues from milestone payments from our licensees during 2001 and \$1,001,000 (on an unaudited basis) from these sources during the nine months ended September 30, 2002, we do not have any significant sources of recurring operating revenues. We will not have significant recurring operating revenues until at least one of the following occurs:

one or more of our currently licensed products is commercialized by our licensees that generates royalty income for us

we are able to enter into license or other arrangements with third parties who are then able to complete the development and commercialize one or more of our other products that are currently under development

we are able to acquire products from third parties that are already being marketed or are approved for marketing

We are likely to incur negative cash from operations until such time, if ever, as we can generate significant recurring revenues. Should we be unable to generate these recurring revenues by early 2004, it is likely that we will become dependent on obtaining financing from third parties to maintain our operations. We have no commitments from third parties to provide us with any debt or equity financing. Accordingly, financing may be unavailable to us or only available on terms that substantially dilute our existing shareholders. A lack of needed financing could force us to reduce the scope of or terminate our operations or to seek a merger with or be acquired by another company. There can be no assurance that we would be able to identify an appropriate company to merge with or be acquired by or that we could consummate such a transaction on terms that would be attractive to our shareholders or at all.

We Have Changed Our Business Strategy, Which Will Require Us to Find and Rely Upon Third Parties for the Development of Our Products and to Provide Us With Products

We have modified our prior business strategy of internally developing FLOCOR and our other potential products not yet licensed to third parties. We will now seek to enter into strategic alliances, license agreements or other collaborative arrangements with larger pharmaceutical companies that will provide for those companies to be responsible for the development and marketing of our products. There can be no assurance that our products will have sufficient potential commercial value to enable us to secure these arrangements with suitable companies on attractive terms or at all. If we enter into these arrangements, we will be dependent upon the timeliness and effectiveness of the development and marketing efforts of our contractual partners. If these companies do not allocate sufficient personnel and resources to these efforts or encounter difficulties in complying with applicable FDA requirements, the timing of receipt or amount of revenues from these arrangements may be materially and adversely affected. By entering into these arrangements rather than completing the development and then marketing these products on our own, we may suffer a reduction in the ultimate overall profitability for us of these products. If we are unable to enter into these arrangements for a particular product, we may be required to either sell the product to a third party or abandon it unless we are able to raise sufficient capital to fund the substantial expenditures necessary for development and marketing of the product.

We will also seek to acquire products from third parties that already are being marketed or have previously been marketed. We have not yet identified any of these products. It may be difficult for us to acquire these types of products with our limited financial resources, and we may

incur substantial shareholder dilution if we acquire these products with our securities. We do not have any prior experience in

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acquiring or marketing products and may need to find third parties to market these products for us. We may also seek to acquire products through a merger with one or more privately held companies that own such products. Although we anticipate that we would be the surviving company in any such merger, the owners of the private company could be issued a substantial or even controlling amount of stock in our company.

Our Limited Financial Resources May Adversely Impact Our Ability to Execute Certain Strategic Initiatives

On September 30, 2002 we had (on an unaudited basis) approximately \$2,126,000 in cash and cash equivalents and approximately \$1,846,000 in working capital. Our recently modified product development strategy calls for seeking strategic alliances, licensing agreements or other collaborative arrangements with larger pharmaceutical companies to complete the development of FLOCOR and our other potential products, and we will not continue any further FLOCOR development work on our own in the meantime. Although we are not doing any further development work on TranzFect, our two licensees for this technology (Merck & Co. and Vical Incorporated) are continuing to do development work on product applications for this technology that could entitle us to future milestone payments should they continue with this work and it successfully meets the defined milestones, as well as future royalty payments should either of these licensees commercialize products based on our technology. We also will seek to acquire products from third parties that already are being or have previously been marketed or are approved for marketing. Although we believe this strategy will enhance our ability to achieve profitability, our lack of substantial available funds may make it difficult for us to acquire new products or to adopt other strategic initiatives in the future, such as acquiring or developing a marketing organization for our products or resuming internal development work on our products.

Our Recent Acquisition of Global Genomics May Place Additional Financial and Operational Burdens on Us

In July 2002, we acquired Global Genomics through a merger. Global Genomics is a development stage company that, to date, has not generated any operating revenue, does not expect to generate any revenues in the foreseeable future and has operated at a loss since its organization in May 2000. From inception through September 30, 2002, Global Genomics had a cumulative loss (on an unaudited basis) of (\$2,271,000), a loss of (\$1,563,000) for the year ended December 31, 2001 and a loss (on an unaudited basis) of (\$456,000) for the nine months ended September 30, 2002. We have moved our headquarters in connection with the merger to Los Angeles, California while we continue to incur a substantial lease expense (\$14,000 per month, less offsetting sublease income of currently \$3,000 per month) for our prior headquarters in Norcross, Georgia. We may be unable to substantially mitigate the future rental expense for our prior headquarters by subleasing this space.

Although a majority of the members of our board of directors were directors prior to our merger with Global Genomics, all of our then current operating officers were terminated as a part of the merger. This change in personnel may place additional administrative burdens on our management in conducting our operations.

If Our Products Are Not Successfully Developed and Approved by the FDA, We May Be Forced to Reduce or Terminate Our Operations

Each of our products is in the development stage and must be approved by the FDA or similar foreign governmental agencies before they can be marketed. The process for obtaining FDA approval is both time-consuming and costly, with no certainty of a successful outcome. This process typically includes the conduct of extensive pre-clinical and clinical testing, which may take longer or cost more than we or our licensees currently anticipate due to numerous factors such as:

difficulty in securing centers to conduct trials

difficulty in enrolling patients in conformity with required protocols or projected timelines

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unexpected adverse reactions by patients in trials

difficulty in obtaining clinical supplies of the product

changes in the FDA s requirements for our testing during the course of that testing

inability to generate statistically significant data confirming the efficacy of the product being tested

Our TranzFect technology is currently in Phase I clinical trials that are being conducted by our licensee, Merck & Co., as a component of a vaccine to prevent AIDS. Since TranzFect is to be used as a component in vaccines, we do not need to seek FDA approval, but the vaccine manufacturer will need to seek FDA approval for the final vaccine formulation containing TranzFect.

We May Be Unable to Establish a Viable Medical Indication for FLOCOR or Find a Partner to Fund the Necessary Research for FLOCOR

In December 1999, we reported results from our Phase III clinical trial of FLOCOR for treatment of sickle cell disease patients experiencing an acute vaso-occlusive crisis (a blockage of blood flow caused by deformed or sickled red blood cells). Overall, the study did not achieve the statistical target for its primary objective, which was to decrease the length of vaso-occlusive crisis for the study population as a whole. The results of this study showed substantial departures from the assumptions used in designating length of crisis as the primary objective, but this experience could be advantageous in the design of future clinical trials. For patients 15 years of age or younger, the number of patients achieving resolution of crisis was higher for FLOCOR-treated patients at all time periods than for placebo-treated patients, which may indicate that future clinical trials should focus on pediatric patients.

To generate sufficient data to seek FDA approval for FLOCOR will require additional clinical studies, which will entail substantial time and expense. We do not intend to conduct or fund these tests ourselves but will seek a strategic alliance partner or licensee for this purpose. The failure of our prior Phase III trial to generate sufficient data could make it more difficult for us to secure a strategic alliance partner or licensee for this product. In June 2002, the National Heart, Lung and Blood Institute of the National Institutes of Health turned down a grant application by Johns Hopkins University School of Medicine to provide financial support for a potential new Phase III trial for FLOCOR. Accordingly, we may encounter difficulty in obtaining future governmental financial support for FLOCOR development work should we seek such support.

If Blizzard Genomics Fails to Successfully Commercialize Its Products, the Value of Our Assets Will Be Adversely Impacted

Blizzard Genomics, Inc., which is Global Genomics principal portfolio company, has not yet commercialized any of its products. Although Blizzard Genomics plans to introduce its first product, the I-Scan Imager, a low cost DNA chip reader, in the first half of 2003 and its second product, its T-Chip technology, in 2004, it may experience delays in completing the development of or commercially launching these products, which will be used in research laboratories and will not require FDA approval prior to their being marketed. These products are likely to face intense market competition from existing products or technologies and products or technologies that are developed in the future. Blizzard Genomics is the licensee of several U.S. patents, and is seeking additional patent protection for its products and technologies. There can be no assurance, however, that the company will be able to secure sufficient patent coverage for its products and technologies. The failure of Blizzard Genomics to successfully commercialize its products would require us to write down or write off on our balance sheet the substantial carrying value of Global Genomics investment in that company as part of our assets, which would have a materially adverse effect on our stockholders

equity.

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Blizzard Genomics May Be Unable to Raise Sufficient Funding to Commercialize Its Products, Which Would Adversely Impact the Value of Our Assets

Blizzard Genomics has no working capital and is currently seeking to raise up to \$2,000,000 in capital to fund the commercial launch of the I-Scan Imager, completion of development of its T-Chip technology and for its working capital needs. Blizzard Genomics has encountered difficulty to date in obtaining this capital. Failure to raise at least a portion of this capital could delay Blizzard Genomics commercialization of its products and might force it to suspend its operations. Should Blizzard Genomics raise at least \$750,000 in capital, it believes that it would have sufficient funding to begin commercial marketing of the I-Scan Imager but would require additional capital to complete development of its T-Chip technology on a timely basis and might need additional capital to support its operations. Any significant delay in the commercialization of Blizzard Genomics products or the cessation of its operations would adversely affect the carrying value of Global Genomics investment in that company as part of our assets, which would have a materially adverse effect on our stockholders equity.

We Are Dependent Upon a Limited Operational Management Team and Need to Recruit a Chief Financial Officer and Perhaps Other Personnel to Effectively Operate

Our current management team is limited to Steven A. Kriegsman, our Chief Executive Officer and interim Chief Financial Officer, and Kathryn H. Hernandez, our Corporate Secretary. We are, therefore, very dependent on the availability and quality of the efforts of Mr. Kriegsman in managing our company. We will need to recruit a permanent Chief Financial Officer and may need to recruit other personnel in order to effectively operate the company and carry out our business plan. As provided by the terms of our merger with Global Genomics, we will seek to hire a full-time Chief Executive Officer to replace Mr. Kriegsman, whose employment agreement expires in July 2003. There can be no assurance that Mr. Kriegsman will be willing to continue to serve as our Chief Executive Officer if we have not found his replacement before expiration of his current employment agreement.

We Are Subject to Intense Competition That Could Materially Impact Our Operating Results

We and our strategic partners or licensees may be unable to compete successfully against our current or future competitors. The pharmaceutical, biopharmaceutical and biotechnology industry is characterized by intense competition and rapid and significant technological advancements. Many companies, research institutions and universities are working in a number of areas similar to our primary fields of interest to develop new products. There also is intense competition among companies seeking to acquire products that already are being marketed. Many of the companies with which we compete have or are likely to have substantially greater research and product development capabilities and financial, technical, scientific, manufacturing, marketing, distribution and other resources than at least some of our present or future strategic partners or licensees

As a result, these competitors may:

Succeed in developing competitive products earlier than we or our strategic partners or licensees

Obtain approvals for such products from the FDA or other regulatory agencies more rapidly than we or our strategic partners or licensees do

Obtain patents that block or otherwise inhibit the development and commercialization of our product candidates

Develop treatments or cures that are safer or more effective than those we propose for our products

Devote greater resources to marketing or selling their products

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Introduce or adapt more quickly to new technologies or scientific advances

Introduce products that make the continued development of our product candidates uneconomical

Withstand price competition more successfully than our strategic partners or licensees can

More effectively negotiate third-party strategic alliances or licensing arrangements

Take advantage of product acquisition or other opportunities more readily than we can

Although we do not expect FLOCOR to have direct competition from other products currently available or that we are aware of that are being developed related to FLOCOR sability to reduce blood viscosity in the cardiovascular area, there are a number of anticoagulant products that FLOCOR would have to compete against, such as tissue plasminogen activator (t-PA) and streptokinase (blood clot dissolving enzymes) as well as blood thinners such as heparin and coumatin, even though FLOCOR acts by a different mechanism to prevent damage due to blood coagulation. In the sickle cell disease area, we would compete against companies that are developing or marketing other products to treat sickle cell disease, such as Droxia (hydroxyurea) marketed by Bristol-Myers Squibb Co. and Decitabine, which is being developed by SuperGen, Inc. Our TranzFect technology will compete against a number of companies that have developed adjuvant products, such as the adjuvant QS-21 marketed by Aquila Biopharmaceuticals, Inc. and adjuvants marketed by Corixa. Blizzard Genomics products will compete with a number of currently marketed products, including those offered by Axon Instruments, Affymetrix, Applied Precision, Perkin Elmer and Agilent Technologies.

We Depend on a Limited Number of Suppliers for an Adequate Supply of Materials, Which May Negatively Affect Our Ability to Manufacture Our Products

We require, and any licensee that we secure for the development and marketing of FLOCOR is likely to also require, three suppliers of materials or services to manufacture FLOCOR. These consist of a supplier of poloxamer 188, which is the raw material used to manufacture FLOCOR (the raw drug substance), and a manufacturer who can refine the raw drug substance to our specifications (the purified drug substance), and a manufacturer who can mix the purified drug substance with other inactive ingredients in a sterile environment to produce the final dosage form of FLOCOR. Our inability to maintain relationships with those suppliers or the inability of any licensee of FLOCOR to maintain these relationships or provide other suitable manufacturing relationships could result in lengthy delays in the FDA and other regulatory agencies approval processes, causing us or our licensee to incur substantial unanticipated costs and delays or an inability to produce, market and distribute our product.

Although we have no formal agreements with our suppliers of the raw poloxamers or a manufacturer who can mix the final dosage form of FLOCOR, we believe that supplies of the raw poloxamers are readily available from a number of suppliers and that a number of manufacturers are capable of mixing the final dosage form of FLOCOR. Organichem, Corp., which is to provide us with commercial supplies of FLOCOR purified drug substance, has advised us that it does not intend to renew our agreement when it expires in December 2003. We or any licensee of our FLOCOR product could encounter difficulty replacing Organichem with another supplier, since special purpose equipment is required for this manufacturing process. We are continuing to seek a strategic partner for the development of FLOCOR. However, in light of the relatively short remaining term of the Organichem contract, the significant costs that would be associated with our relocating the equipment that we own in connection with this contract and our lack of a strategic partner at this time for the development of FLOCOR, we have decided to write off as of the end of 2002 our depreciable assets relating to this contract (which were valued at approximately \$1,100,000 as of September 30, 2002).

We May Be Unable to Protect Our Intellectual Property Rights, Which Could Adversely Affect the Value of Our Assets

Obtaining and maintaining patent and other intellectual property rights for our technologies and potential products is critical to establishing and maintaining the value of our assets and our business. Although we believe that we have significant patent coverage for our FLOCOR and TranzFect technologies, there can be no assurance that this coverage will be broad enough to prevent third parties from developing or commercializing similar or identical technologies, that the validity of our patents will be upheld if challenged by third parties or that our technologies will not be deemed to infringe the intellectual property rights of third parties. Any litigation brought by us to protect our intellectual property rights or by third parties asserting intellectual property rights against us could be costly and have a material adverse effect on our operating results or financial condition and make it more difficult for us to enter into strategic alliances with third parties to develop our products or discourage our existing licensees from continuing their development work on our potential products. If our patent coverage is insufficient to prevent third parties from developing or commercializing similar or identical technologies, the value of our assets is likely to be materially and adversely affected.

We May Incur Substantial Costs from Future Clinical Testing or Product Liability Claims

If any of our products are alleged to be defective, they may expose us to claims for personal injury by patients in clinical trials of our products or by patients using our commercially marketed products. Even if the commercialization of one or more of our products is approved by the FDA, users may claim that such products caused unintended adverse effects. We currently do not carry product liability insurance covering the use of our products in human clinical trials or the commercial marketing of these products but anticipate that our licensees who are developing our products will carry liability insurance covering the clinical testing and marketing of those products. However, if someone asserts a claim against us and the insurance coverage of our licensees or their other financial resources are inadequate to cover a successful claim, such successful claim may exceed our financial resources and cause us to discontinue operations. Even if claims asserted against us are unsuccessful, they may divert management s attention from our operations and we may have to incur substantial costs to defend such claims.

Our Common Stock May Be Delisted From Nasdaq, Which Could Adversely Affect the Trading Market For and Value of Our Common Stock

Our ability to continue to have our common stock listed on the Nasdaq SmallCap Market depends on our satisfying applicable Nasdaq listing criteria. We have been unable to maintain compliance with Nasdaq s\$1 minimum closing bid requirement and failed to come back into compliance with this requirement by Nasdaq s original deadline of August 13, 2002. This deadline was then extended by Nasdaq until February 10, 2003 pursuant to Nasdaq s rule affording additional time to comply for those companies who otherwise satisfy Nasdaq s core initial listing requirements (including shareholders—equity of at least \$5,000,000). We were unable to comply with the minimum bid requirement by February 10, 2003. However, in February 2003 Nasdaq proposed a rule that would provide us with up to an additional year to comply with its \$1 minimum bid price requirement so long as we continue to satisfy Nasdaq s core listing requirements. Adoption of this rule is subject to SEC compliance. There can be no assurance that the SEC will approve this rule or that we will continue to satisfy Nasdaq s core listing requirements which could make our common stock subject to delisting from the Nasdaq Small Cap Market even if Nasdaq—s proposed rule is adopted. If our common stock is delisted from the Nasdaq Small Cap Market, an active trading market for our common stock may cease to exist and the delisting could materially and adversely impact the market value of our common stock.

It Will Be Difficult For Us To Manage Our Operations If We Are Regulated As An Investment Company In The Future

The Investment Company Act of 1940 regulates certain companies that own investment securities with a value greater than 40% of the total assets of that company. In the Global Geonomics merger, we acquired a 40% equity interest in Blizzard Genomics, Inc., which investment represents a material amount of our total assets. If our ownership interest in Blizzard Genomics significantly decreases or we otherwise no longer remain the largest shareholder of Blizzard Genomics, the value of our investment in Blizzard Genomics could cause us to become subject to the provisions of the Investment Company Act. Should we become subject to the Investment Company Act, we would essentially have to operate as a mutual fund and would be subject to all of the substantive regulations imposed on such companies, including the restrictions on the securities we can issue, the rules specifying the composition and structure of our management, the additional reporting requirements, and other limitations on our ability to conduct our operations in the manner currently conducted. Our Board of Directors has determined that, should we become subject to these provisions, we will either (i) seek an order from the SEC exempting us from these provisions, or (ii) attempt to restructure our business in a manner that would relieve us from these provisions. The regulatory requirements for investment companies are extremely restrictive and would materially and adversely affect our ability to manage and operate our business and could materially and adversely affect our financial condition. Although it is our intention to remain an operating company that is not subject to the Investment Company Act, no assurance can be given that we will not become subject to the provisions of that act.

Our Anti-Takeover Provisions May Make It More Difficult to Change Our Management or May Discourage Others From Acquiring Us and Thereby Adversely Affect Shareholder Value

We have a shareholder rights plan and provisions in our bylaws that may discourage or prevent a person or group from acquiring us without our board of directors approval. The intent of the shareholder rights plan and our bylaw provisions is to protect our shareholders interests by encouraging anyone seeking control of our company to negotiate with our board of directors.

We have a classified board of directors, which requires that at least two stockholder meetings, instead of one, will be required to effect a change in the majority control of our board of directors. This provision applies to every election of directors, not just an election occurring after a change in control. The classification of our board increases the amount of time it takes to change majority control of our board of directors and may cause our potential purchasers to lose interest in the potential purchase of us, regardless of whether our purchase would be beneficial to us or our stockholders. The additional time and cost to change a majority of the members of our board of directors makes it more difficult and may discourage our existing shareholders from seeking to change our existing management in order to change the strategic direction or operational performance of our company.

Our bylaws provide that directors may only be removed for cause by the affirmative vote of the holders of at least a majority of the outstanding shares of our capital stock then entitled to vote at an election of directors. This provision prevents stockholders from removing any incumbent director without cause. Our bylaws also provide that a stockholder must give us at least 120 days notice of a proposal or director nomination that such stockholder desires to present at any annual meeting or special meeting of stockholders. Such provision prevents a stockholder from making a proposal or director nomination at a stockholder meeting without us having advance notice of that proposal or director nomination. This could make a change in control more difficult by providing our directors with more time to prepare an opposition to a proposed change in control. By making it more difficult to remove or install new directors, the foregoing bylaw provisions may also make our existing management less responsive to the views of our shareholders with respect to our operations and other issues such as management selection and management compensation.

Our Outstanding Options and Warrants and the Registration of Our Shares Issued in the Global Genomics Merger May Adversely Affect the Trading Price of Our Common Stock

As of January 31, 2003, there were outstanding stock options and warrants to purchase 6,642,826 shares of our common stock at exercise prices ranging from \$0.01 to \$7.75 per share. Our outstanding options and warrants could adversely affect our ability to obtain future financing or engage in certain mergers or other transactions, since the holders of options and warrants can be expected to exercise them at a time when we may be able to obtain additional capital through a new offering of securities on terms more favorable to us than the terms of outstanding options and warrants. For the life of the options and warrants, the holders have the opportunity to profit from a rise in the market price of our common stock without assuming the risk of ownership. To the extent the trading price of our common stock at the time of exercise of any such options or warrants exceeds the exercise price, such exercise will also have a dilutive effect to our stockholders.

This prospectus covers all 8,948,204 of the shares of our common stock that we issued in connection with the Global Genomics merger and all 1,014,677 shares of our common stock issuable upon exercise of warrants assumed by us in connection with the Global Genomics merger, as well as the resale of 200,000 other shares that we have issued and warrants to purchase 391,388 shares that are otherwise outstanding. All of these warrants are exercisable at a prices ranging from \$0.01 to \$1.00 per share, or by means of a cashless exercise. Both the availability for public resale of these shares and the actual exercise and resale of these shares could adversely affect the trading price of our common stock.

We May Experience Volatility in Our Stock Price, Which May Adversely Affect the Trading Price of Our Common Stock

The market price of our common stock has experienced significant volatility in the past and may continue to experience significant volatility from time to time. Our stock price has ranged from \$0.21 to \$6.44 over the past three years. Factors such as the following may affect such volatility:

our quarterly operating results

announcements of regulatory developments or technological innovations by us or our competitors

government regulation of drug pricing

developments in patent or other technology ownership rights

public concern regarding the safety of our products

Other factors which may affect our stock price are general changes in the economy, financial markets or the pharmaceutical or biotechnology industries.

FORWARD-LOOKING STATEMENTS

In addition to the other information contained in this prospectus, investors should carefully consider the risk factors disclosed in this prospectus, including those beginning on page 3, in evaluating an investment in our common stock. This prospectus and the documents incorporated herein by reference include forward-looking statements within the meaning of Section 27A of the Securities Act and Section 21E of the Securities Exchange Act. All statements other than statements of historical fact are forward-looking statements for purposes of these provisions, including any projections of financial items, any statements of the plans and objectives of management for future operations, any statements concerning proposed new products or services, any statements regarding future economic conditions or performance, and any statement of assumptions underlying any of the foregoing. In some cases, forward-looking statements can be identified by the use of terminology such as may, will, expects, plans, anticipates, estimates, potential, or could or the negative thereof or other comparable terminology. Although we believe the

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expectations reflected in the forward-looking statements contained herein and in such incorporated documents are reasonable, there can be no assurance that such expectations or any of the forward-looking statements will prove to be correct, and actual results could differ materially from those projected or assumed in the forward-looking statements. Our future financial condition and results of operations, as well as any forward-looking statements, are subject to inherent risks and uncertainties, including but not limited to the risk factors set forth above and for the reasons described elsewhere in this prospectus. All forward-looking statements and reasons why results may differ included in this prospectus are made as of the date hereof, and we assume no obligation to update any such forward-looking statement or reason why actual results might differ.

USE OF PROCEEDS

We will bear the costs and expenses of registering the shares offered by the selling securityholders. Other than the exercise of the warrants described herein (to the extent they may be exercised), we will not receive any of the proceeds from the sale of the shares offered by the selling securityholders. The holders of the warrants are not obligated to exercise the warrants, and there can be no assurance that they will choose to do so. The warrants may be exercised pursuant to the cash-less exercise provisions contained therein, or may be exercised for cash. If all of the warrants are exercised in full for cash, we will receive approximately \$297,000 upon exercise.

We intend to use any proceeds we receive from the exercise of the warrants for working capital and general corporate purposes.

SELLING SECURITYHOLDERS

Selling Securityholder Table

The following table sets forth certain information regarding the beneficial ownership of our common stock by the selling securityholders as of December 31, 2002. To our knowledge, each of the selling securityholders has sole voting and investment power with respect to the shares of common stock shown, subject to applicable community property laws. For purposes of the following table we have assumed that the selling securityholders will sell all the shares of our common stock being offered in this prospectus.

In connection with the merger with Global Genomics, the shareholders of Global Genomics agreed that 5% of the shares of CytRx common stock that they were entitled to receive in the merger (including shares issuable upon the exercise of warrants) would be held by us in escrow to satisfy any indemnification claims that we might make against Global Genomics pursuant to the merger agreement. Accordingly, 5% of the total shares issued or issuable to each Global Genomics shareholder in the merger have been deposited into escrow and, therefore, cannot be sold until released from escrow. Under the terms of the escrow, any shares not returned to us may be released after July 20, 2003. The number of shares of our common stock beneficially owned by certain of the selling securityholders listed in the following table includes the shares that are held in escrow even though those shares cannot be sold until such shares are released after July 20, 2003. In the event that we make an indemnification claim against Global Genomics, the number of shares owned by the former Global Genomics shareholders would be reduced by the number of shares that are cancelled through the escrow. Accordingly, the actual number of shares that the selling securityholders may be entitled to sell under this prospectus could be less than the number of shares listed below.

Two of the selling securityholders, Steven A. Kriegsman and Dean Ader, are registered representatives with a division of a broker-dealer firm but are not themselves broker-dealers. Mr. Kriegsman and Mr. Ader acquired the securities covered by this prospectus in the ordinary course of

business and, at the time of their acquisition of these securities, they had no agreements or understandings with any person, whether directly or indirectly, to distribute these securities.

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	Beneficial Ownership Before Offering(1)			Beneficial Ownership After Offering (1)(3)		
	Number of Shares	Percent(2)	Number of Shares Being Offered	Number of Shares	Percent(2)	
Steven A. Kriegsman & Marina Kriegsman Jt. Ten						
WROS	4,113,016(4)	18.20%	4,113,016	0	*	
B.S. Jr. Corp	811,925	3.67%	811,925	0	*	
Michael R. Hayden	306,386	1.38%	306,386	0	*	
Clifford H. Pearson and Nancy G. Pearson, as Trustees of the						
Pearson Family Trust, dated July 3, 1991	355,024(5)	1.60%	355,024	0	*	
Steve K. Wasserman and Linda S. Wasserman, as Trustees of						
the Wasserman Family Trust, dated May 6, 1993	297,578(6)	1.34%	297,578	0	*	
David B. Casselman and Pamela I. Casselman, as Trustees of						
the Casselman Family Trust dated August 5, 1996	297,578(7)	1.34%	297,578	0	*	
Leonard J. Comden and Susan E. Comden, as Trustees of the						
LSC Family Trust, dated May 17, 1996	99,193(8)	*	99,193	0	*	
Leonard Ruiz Jr.	478,730(9)	2.15%	478,730	0	*	
Elliott J. Cody	333,195(10)	1.49%	333,195	0	*	
Wasserman, Comden, Casselman & Pearson L.L.P.	287,662(11)	1.30%	287,662	0	*	
Beth Genovese	30,639	*	30,639	0	*	
Donald Kreiss	19,149	*	19,149	0	*	
Dean Ader	26,809	*	26,809	0	*	
Sara Binder	103,406	*	103,406	0	*	
Dikran Bilemjian	7,660	*	7,660	0	*	
Louis Ignarro	91,916	*	91,916	0	*	
Cheryl Vigna	7,660	*	7,660	0	*	
Robert Friedland	57,448	*	57,448	0	*	
Al Talbot	57,448	*	57,448	0	*	
Irwin J. Gruvernan	57,448	*	57,448	0	*	
Marvin R. Selter IRA Rollover	153,193	*	153,193	0	*	
Selter Family Trust U/T/D 4-8-75	204,258	*	204,258	0	*	
Eric and Lynn Selter Charitable Remainder Unitrust	76,597	*	76,597	0	*	

	Beneficial Ownership Before Offering(1)			Beneficial Ownership After Offering (1)(3)		
	Number of Shares	Percent(2)	Number of Shares Being Offered	Number of Shares	Percent(2)	
Eric and Lynn Selter Family Trust	102,129	*	102,129	0	*	
Clyde J. Berg	408,516	1.84%	408,516	0	*	
Technical Advertising Sales Engineering Corp.	102,129	*	102,129	0	*	
Unidel Corp.	287,238	1.30%	287,238	0	*	
Jybe Group	388,286	1.75%	388,286	0	*	
Demetri E. Argyropoulos	19,149	*	19,149	0	*	
Bepariko BioCom, Inc.	207,044	*	207,044	0	*	
Jeffrey L. Davidson	61,277(12)	*	61,277	0	*	
Lindquest & Vennum PLLP	30,639	*	30,639	0	*	
Mark Gelfer	19,149(12)	*	19,149	0	*	
WJB Insurance Company	25,533	*	25,533	0	*	
Ira and Marsha Mintz Trust UAD 12/15/87	99,576	*	99,576	0	*	
The Matheson Trust dated 6/17/96	38,298	*	38,298	0	*	
Paul Marangos	141,388(12)	*	141,388	0	*	
Corporate Consulting International Group	250,000(12)	1.12%	250,000	0	*	
James Skalko	100,000	*	100,000	0	*	

Less than one percent. *

- (1) Beneficial ownership is determined in accordance with the rules of the SEC and generally includes voting or investment power with respect to securities. Shares of common stock subject to options, warrants and convertible securities currently exercisable or convertible, or exercisable or convertible within 60 days, are deemed outstanding, including for purposes of computing the percentage ownership of the person holding such option, warrant or convertible security, but not for purposes of computing the percentage of any other holder.
- (2) Included as outstanding for this purpose are 22,143,927 shares outstanding on October 10, 2002, plus, in the case of each of these selling stockholders, the shares issuable upon exercise of the warrants held by such selling stockholder (but not including shares issuable upon exercise or conversion of any other options, warrants or other securities held by any other person).
- (3) Assumes that all shares included in this prospectus will be sold by the selling stockholder.
- (4) Represents 3,653,664 shares owned by the Kriegsmans and warrants to purchase 459,352 shares of our common stock.
- (5) Represents 315,960 shares owned by Pearson Trust and warrants to purchase 39,064 shares of our common stock.
- (6) Represents 258,514 shares owned by the Wasserman Trust and warrants to purchase 39,064 shares of our common stock.
- (7) Represents 258,514 shares owned by the Casselman Trust and warrants to purchase 39,064 shares of our common stock.

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- (8) Represents 86,171 shares owned by the LSC Trust and warrants to purchase 13,022 shares of our common stock.
- (9) Represents 382,984 shares owned by Mr. Ruiz and warrants to purchase 95,746 shares of our common stock.
- (10) Represents 84,256 shares owned by Mr. Cody and warrants to purchase 248,939 shares of our common stock.
- (11) Includes 187,662 shares registered in the name of Wasserman, Comden, & Casselman L.L.P., the prior name of the firm.
- (12) Represents shares of our common stock issuable pursuant to outstanding warrants.

Relationships with Selling Securityholders

The selling securityholders include (i) all of the securityholders of Global Genomics, who acquired the shares of our common stock listed above in the merger or who may acquire shares of our common stock upon exercise of warrants that we assumed in connection with the merger as listed above, (ii) the individual described below who introduced us to Cappello Capital Corp., (iii) the law firm described below that previously provided services to Global Genomics in exchange for shares of our common stock, and (iv) the financial public relations firm described below. In connection with the merger, we entered into a registration rights agreement with the former securityholders of Global Genomics pursuant to which we agreed to register the shares listed above. All of the shares listed in this prospectus other than the shares of the individual, the law firm and the financial public relations and advisory firms described below are being registered pursuant to our registration rights agreement with the Global Genomics stockholders. We intend to keep the registration statement, of which this prospectus is a part, effective until all of the former Global Genomics stockholders listed above have sold all of their CytRx shares or until our ability to register shares on this Form S-3 registration statement is no longer available, whichever occurs first. Our registration of the shares does not necessarily mean that the selling securityholders will sell all or any of the shares.

We granted Paul Marangos a ten-year warrant to purchase 141,388 shares of our common stock at an exercise price of \$1.00 per share in consideration for his initiating our relationship with Cappello Capital Corp. Wasserman, Comden, Casselman & Pearson LLP previously acted as counsel to Global Genomics. In connection with the merger, we agreed to issue, and did issue, 100,000 shares of our common stock in satisfaction of all legal fees due to such firm from Global Genomics. We valued the warrants issued to Mr. Marangos for operating expense purposes and the shares issued to Wasserman, Comden, Casselman & Pearson LLP as part of the Global Genomics purchase price at a total of \$118,000 and \$55,000, respectively.

In July 2002, we agreed to issue stock purchase warrants to Corporate Consulting International Group as payment for financial relations services to be rendered to us by Corporate Consulting International Group. The 250,000 shares listed in the table above represent the vested warrants that we have issued to Corporate Consulting, which warrants are currently exercisable at \$0.58 per share. We valued these warrants for operating expense purposes at a total of \$87,500. In April 2002 and May 2002, we issued a total of 100,000 shares of our common stock to James Skalko as payment for financial advisory services to be rendered to us. We valued these shares for operating expense purposes at a total of \$91,500.

Since July 16, 2002, Steven A. Kriegsman, Louis J. Ignarro, Ph.D., and Joseph Rubinfeld, Ph.D. have been directors of CytRx. In addition, Mr. Kriegsman has been our Chief Executive Officer since July 16, 2002. Effective as of July 19, 2002, we also agreed to pay the Kriegsman Capital Group (an affiliate of Mr. Kriegsman) rent and other expenses related to Mr. Kriegsman s employment with us. Mr. Kriegsman is a related party, and we believe that the terms under which we have employed Mr. Kriegsman as our Chief Executive Officer and have been paying Kriegsman Capital Group for this rent and other expenses are at least as favorable to us as could have been obtained from an unrelated third party.

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Elliott Cody and Leonard Ruiz previously were officers or directors of Global Genomics. Mr. Cody provided consulting services to us in the area of financial accounting and reporting and other related matters from July 2002 through February 2003, and Mr. Ruiz has been providing us with consulting services in the area of pharmaceutical and biotech company and product investments and acquisitions and other related matters under a one-year agreement that commenced in July 2002. We believe that the terms under which we have obtained the consulting services from Messrs. Cody and Ruiz are at least as favorable to us as could have been obtained from an unrelated third party.

Other than as set forth above, none of the selling securityholders has had any position, office, or other material relationship with us or any of our affiliates within the past three years.

The information in the above table is as of the date of this prospectus. Information concerning the selling securityholders may change from time to time and any such changed information will be described in supplements to this prospectus if and when necessary.

PLAN OF DISTRIBUTION

The shares the selling shareholders are offering under this registration statement consist of 10,554,269 shares of our common stock, \$.001 par value per share (together with a Series A Junior Participating Preferred Stock Purchase Right that is associated with each share). The shares include 1,406,065 shares reserved for the exercise of warrants issued to some of the selling securityholders. The purpose of this prospectus is to permit the selling securityholders, if they desire, to dispose of some or all of their shares at such times and at such prices as each may choose. Whether sales of shares will be made, and the timing and amount of any sale made, is within the sole discretion of each selling securityholder.

The common stock covered by this prospectus may be offered for sale from time to time by the selling securityholders to or through underwriters or directly to other purchasers or through agents in one or more market transactions, in one or more private transactions or in a combination of such methods of sale, at prices then prevailing, at prices related to such prices or at negotiated prices. Such methods of distribution may include, without limitation (a) a block trade in which the broker-dealer so engaged will attempt to sell the common stock as agent but may position and resell a portion of the block as a principal to facilitate the transaction; (b) purchases by a broker-dealer as a principal and resale by such broker-dealer for its own account pursuant to the registration statement of which this prospectus is a part; (c) ordinary brokerage transactions and transactions in which the broker solicits purchasers; and (d) face-to-face transactions between sellers and purchasers without a broker or dealer. This prospectus may be amended and supplemented from time to time to describe a specific plan of distribution.

In connection with distributions of the common stock or otherwise, the selling securityholders may enter into hedging transactions with broker-dealers or other financial institutions. In connection with such transactions, brokers-dealers or other financial institutions may engage in short sales of common stock in the course of hedging the positions they assume with the selling securityholders. The selling securityholders may also enter into other transactions with broker-dealers or other financial institutions which require the delivery to such broker-dealer or financial institution of the shares of common stock offered hereby, which such broker-dealer or other financial institution may resell pursuant to this prospectus (as supplemented or amended to reflect such transaction). The selling securityholders may also pledge the shares offered hereby to a broker-dealer or other financial institution and, upon a default, such broker-dealer or other financial institution may effect sales of the pledged shares pursuant to this prospectus (as supplemented or amended to reflect such transaction). In addition, any common stock covered by this prospectus that so qualifies may be sold under Rule 144 under the Securities Act.

Brokers, dealers or agents may receive compensation in the form of commissions, discounts or concessions from the selling securityholders in amounts to be negotiated in connection with sales pursuant thereto. Such brokers or dealers and any other participating brokers or dealers may be deemed to be underwriters within the meaning

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of the Securities Act, in connection with such sales and any such commission, discount or concession may be deemed to be underwriting discounts or commissions under the Securities Act.

We will bear the costs, expenses and fees in connection with the registration of the shares of common stock offered hereby. Commissions, discounts and transfer taxes, if any, attributable to the sales of the common stock will be borne by the selling securityholders. The selling securityholders have agreed or may agree to indemnify us or any underwriter, as the case may be, and any of their respective affiliates, directors, officers and controlling persons, against certain liabilities in connection with the offering of the common stock pursuant to this prospectus, including liabilities arising under the Securities Act. In the registration rights agreement that we entered into with certain of the selling securityholders, we have agreed to indemnify those the selling securityholders against certain liabilities in connection with the offering of the common stock pursuant to this prospectus, including liabilities arising under the Securities Act.

We have informed the selling securityholders that the anti-manipulation provisions of Regulation M under the Exchange Act may apply to their sales of the shares offered hereby and have furnished each of such selling securityholders with a copy of these provisions. We have also advised the selling securityholders of the requirement for delivery of this prospectus in connection with any sale of the shares.

WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly, and current reports, proxy statements, and other information with the Securities and Exchange Commission. You may read any document that we have filed or will file with the SEC without charge at the public reference facilities maintained by the SEC at its main office located at Room 1024, Judiciary Plaza, 450 Fifth Street, N.W., Washington, D.C. 20549.

For a fee prescribed by the SEC, you may obtain copies of all or any portion of the documents that we file with the SEC from the main office of the Public Reference Section of the SEC at the above address, or by calling the SEC at 1-800-SEC-0330. Our filings are also available to the public from commercial document retrieval services and at the SEC s Website at http://www.sec.gov.

This prospectus constitutes part of a registration statement on Form S-3 filed by us with the SEC under the Securities Act of 1933, as amended. This prospectus does not contain all of the information contained in the registration statement, and reference is hereby made to the registration statement and related exhibits for information with respect to our company and the securities offered hereby. Any statements contained herein concerning the provisions of any document are not necessarily complete, and, in such instance, reference is made to the copy of such document filed as an exhibit to the registration statement or otherwise filed with the SEC. Each such statement is qualified in its entirety by such reference.

Our common stock is listed and traded on the Nasdaq SmallCap Market under the symbol CYTR . Reports, proxy and information statements, and other information concerning CytRx also may be inspected at the offices of the National Association of Securities Dealers, Inc. located at 1735 K Street, N.W., Washington, D.C. 20006.

INCORPORATION OF INFORMATION FILED WITH THE SEC

The SEC allows us to incorporate by reference the information we file with it, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be a part of this prospectus, and information that we later file with the SEC will automatically update and supersede this information. We incorporate by reference the following documents:

Our annual report on Form 10-K for the fiscal year ended December 31, 2001

Our quarterly report on Form 10-Q for the quarter ended March 31, 2002

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Our current report on Form 8-K/A filed on May 13, 2002

Our current report on Form 8-K filed on May 24, 2002

Our current report on Form 8-K filed on May 28, 2002

Our current report on Form 8-K filed on June 6, 2002

Our Proxy Statement on Schedule 14A for the Annual Meeting of Stockholders held on July 16, 2002

Our current report on Form 8-K filed on August 1, 2002

Our quarterly report on Form 10-Q for the quarter ended June 30, 2002

Our quarterly report on Form 10-Q for the quarter ended September 30, 2002

The description of our Common Stock and Series A junior participating preferred stock purchase rights as described in our registration statements filed under Section 12 of the Securities Exchange Act, and any amendment or report filed for the purpose of updating any such description; and

Any document that we file with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act after the date of this prospectus and before the termination of this offering. Information in these filings will be deemed to be incorporated by reference as of the date we make the filing.

You may request a copy of these filings from us at no cost by writing or calling us at the following address and telephone number: 11726 San Vicente Blvd., Suite 650 Los Angeles, CA 90049 (310) 826-5648 Attention: Kathryn H. Hernandez, Corporate Secretary. You should rely only on the information contained or incorporated by reference in this prospectus. We have not authorized anyone else to provide you with additional or different information. These securities are only being offered in states where the offer is permitted. You should not assume that the information in this prospectus is accurate as of any date other than the dates on the front of this prospectus.

LEGAL MATTERS

The validity of the securities offered hereby has been passed upon by Troy & Gould Professional Corporation, Los Angeles, California.

EXPERTS

Ernst & Young LLP, independent auditors, have audited our consolidated financial statements and schedule included in our Annual Report on Form 10-K for the year ended December 31, 2001, as set forth in their report, which is incorporated by reference in this prospectus and elsewhere in the registration statement. Our financial statements and schedule are incorporated by reference in reliance on Ernst & Young LLP s report, given on their authority as experts in accounting and auditing.

The financial statements of Global Genomics Capital, Inc. as of December 31, 2001 and 2000 and for the year ended December 31, 2001, for the period from inception (May 23, 2000) to December 31, 2000 and for the period from inception (May 23, 2000) to December 31, 2001, incorporated by reference in this prospectus and elsewhere in the registration statement from our Proxy Statement on Schedule 14A for the Annual Meeting of Stockholders held on July 16, 2002, have been audited by Good Swartz Brown & Berns LLP, independent public accountants, as indicated in their report in respect thereto, and are incorporated herein in reliance upon the authority of said firm as experts in giving said report.

Silverman Olson Thorvilson & Kaufmann, Ltd., independent auditors, have audited financial statements of Blizzard Genomics, Inc. for the year ended December 31, 2001, as set forth in their report, which financial statements are contained in our Proxy Statement on Schedule 14A for the Annual Meeting of Stockholders held on July 16, 2002

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and are incorporated by reference in this prospectus and elsewhere in the registration statement. The financial statements and schedules of Blizzard Genomics, Inc. are incorporated by reference in reliance on Silverman Olson Thorvilson & Kaufmann, Ltd. s report, given on their authority as experts in accounting and auditing.

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PART II

INFORMATION NOT REQUIRED IN THE PROSPECTUS

ITEM 16. EXHIBITS

The following exhibits are filed herewith or incorporated by reference as a part of this Registration Statement:

- 2.1 Agreement and Plan of Merger, dated as of February 11, 2002, among CytRx Corporation, GGC Merger Corporation, and Global Genomics Capital, Inc., (incorporated herein by reference from Annex A to the Proxy Statement on Schedule 14A filed on June 11, 2002)
- 2.2 First Amendment to Agreement and Plan of Merger, dated February 22, 2002 (incorporated herein by reference from Annex A to the Proxy Statement on Schedule 14A filed on June 11, 2002)
- 4.1 Certificate of Amendment to Restated Certificate of Incorporation (incorporated herein by reference from Exhibit 3.1 to the Company's current report on Form 8-K filed on September 12, 2000)
- 4.2 Restated Certificate of Incorporation (incorporated by reference from Exhibit 3.1 to Company s restated registration statement on Form S-3 filed on November 5, 1997, File Number 333-39607)
- 4.3 Bylaws, as amended (incorporated by reference from Exhibit 4.2 to the Company s registration statement on Form S-8 filed on July 21, 1997, File Number 333-31717)
- 4.4 Shareholder Protection Rights Agreement dated April 16, 1997 between CytRx Corporation and American Stock Transfer & Trust Company as Rights Agent (Incorporated herein by reference to Exhibit 4.1 to the Company's quarterly report on Form 10-Q for the quarter ended March 31, 1997)
- 5 Opinion of Troy & Gould Professional Corporation.*
- Form of Restriction and Registration Rights Agreement, dated July 16, 2002, between the Company and certain of the selling securityholders (incorporated by reference from Exhibit 10.1 to the Company's Form 8-K filed on August 1, 2002).
- 23.1 Consent of Troy & Gould Professional Corporation (included in Exhibit 5).*
- 23.2 Consent of Ernst & Young, LLP.**
- 23.3 Consent of Good Swartz Brown & Berns, LLP. **
- 23.4 Consent of Silverman Olson Thorvilson & Kaufmann, Ltd.*
- 24 Power of Attorney.**

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this Amendment No. 1 to Registration Statement on Form S-3 to be signed on its behalf by the undersigned, thereunto duly authorized in the City of Los Angeles, State of California, on March 7, 2003.

CYTRX CORPORATION

By:

^{*} Included herewith.

^{**} Previously filed with Registration Statement.

/s/ STEVEN A. KRIEGSMAN

Steven A. Kriegsman Chief Executive Officer

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Pursuant to the requirements of the Securities Act of 1933, this Registration Statement on Form S-3 has been signed by the following persons in the capacities and on the dates indicated on Amendment No. 1.

	Signature	Title	Date
/s/	Steven A. Kriegsman Steven A. Kriegsman	Chief Executive Officer, Interim Chief Financial Officer and Director	March 7, 2003
	Louis J. Ignarro, Ph.D.	Director	
/s/	Joseph Rubinfeld, Ph.D.	Director	March 7, 2003
	Joseph Rubinfeld, Ph.D.		
/s/	Max Link	Director	March 7, 2003
	Max Link		
/s/	ALEXANDER L. CAPPELLO	Director	March 7, 2003
	Alexander L. Cappello		
/s/	RAYMOND C. CARNAHAN	Director	March 7, 2003
	Raymond C. Carnahan		
/s/	Herbert H. Mcdade	Director	March 7, 2003
	Herbert H. Mcdade		

EXHIBIT INDEX

- 2.1 Agreement and Plan of Merger, dated as of February 11, 2002, among CytRx Corporation, GGC Merger Corporation, and Global Genomics Capital, Inc., (incorporated herein by reference from Annex A to the Proxy Statement on Schedule 14A filed on June 11, 2002)
- 2.2 First Amendment to Agreement and Plan of Merger, dated February 22, 2002 (incorporated herein by reference from Annex A to the Proxy Statement on Schedule 14A filed on June 11, 2002)
- 4.1 Certificate of Amendment to Restated Certificate of Incorporation (incorporated herein by reference from Exhibit 3.1 to the Company's current report on Form 8-K filed on September 12, 2000)
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- 24 Power of Attorney.**

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^{**} Previously filed with Registration Statement.